

# Executive summary D2.4

Report on solutions for tackling systemic and technical boundary conditions

TASK 2.2: ASSESSMENT OF IMPLEMENTED SOLUTIONS  
IN THE 12 SELECTED CASE STUDIES FOR TACKLING  
SYSTEMIC AND TECHNICAL BOUNDARY CONDITIONS

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# Introduction

In the circular economy, the role of the waste collection system is both to provide a service to citizens to get rid of their waste and to help to turn waste into a resource by recycling the waste.

Therefore, on the one hand, a waste collection system should trigger citizens so they are willing to cooperate and, on the other hand, enable the collected waste to be sorted and recycled into valuable secondary materials, so that the material loop can be closed.

The analysis of the role of the waste collection system within this recycling value chain will be reported in several deliverables:

- **D2.1 Methodology report:** this report will describe the approach that will be used to analyse the role of the waste collection system in the recycling value chain;
- **D2.2 Analysis of boundary conditions for waste collection systems:** this report will analyse in a general way the role of the waste collection system;
- **D2.4 Report on solutions for tackling systemic and technical boundary conditions:** based on the analysis of several specific case studies, this report will describe how a waste collection system can help to produce recycled materials of high quality;
- **D2.5 Report on implemented solutions and key elements in selected cases for societal acceptance:** this report will describe the factors that influence the behaviour of citizens to participate in a waste collection system

## Objective

The goal of this study is to analyse how and to which extent the waste collection systems as in the selection of 12 case studies provide specific solutions to improve the quality of the collected waste in order to enable the sorter and the recycler to produce more qualitative secondary materials.

## Analysis of the case study

A selection of 12 case studies (5 Paper and Packaging Waste (PPW), 5 Waste of Electrical and Electronic Equipment (WEEE) and 2 Construction and Demolition Waste (CDW)) was analysed.

### Paper and packaging waste

For paper and packaging waste, the analysis of the case studies learns that:

- **A significant fragmented collection scope** has been observed for glass waste and plastic waste;
- In the five cases, light packaging (plastic, metal, drink cartons) is collected together; **collecting these easily sortable fractions together does not or hardly seem to influence the quality** of the collected fractions, while there is definitely an economic benefit;
- The **level of service** provided to citizens, including the collection system and frequency, is **extremely diverse**. Even within the same city, different collection systems can be applied

for one waste stream as the waste collection is often tailored to the needs of specific areas within the city (e.g. multi-family houses versus detached houses);

- **The organisation of waste collection is more and more being outsourced**, either through public-private partnerships or through public authorities subcontracting private companies that might be horizontally integrated, so taking care of sorting and recycling as well;
- Changing or adapting waste collection habits needs **a long term and case-specific approach**: the role of citizens in waste collection is key, so their cooperation should be guaranteed at all times.
- When benchmarking urban mining (secondary materials) against geological mining (primary materials), it becomes clear that, seen the fragmented scope and the diverse methods applied for collecting the waste fractions, **the current extraction of secondary materials from the urban mine is far way more complex and diverse.**

Systemic or technical solutions have been identified with respect to the waste collection to improve the recycling value chain. These solutions are:

- Collect easily sortable waste fractions together;
- Limit the number of collected secondary materials in the scope of the collection (do's and don'ts);
- Make sure that the configuration of the waste collection, sorting and recycling are adapted/aligned to each other; this will allow the recycling value chain to produce qualitative secondary materials in an efficient way;
- Broaden collection scope from packaging waste to similar non-packaging waste fractions, resulting in a higher supply of collected waste;
- Collection in transparent recipients allows visual quality check during collection;
- Adapt the waste collection system to the local conditions (such as dominant type of housing).

## Waste Electrical & Electronic Equipment

**For WEEE**, following solutions were observed made during the analysis of waste collection systems to improve the quality of the collected waste in order to enable the sorter and/or the recycler to produce more qualitative secondary materials:

- **Clear and significant quality differences between WEEE collected through retail bring points and through municipal collection points** are noticed. Having waste managed by trained professionals and concomitantly increasing the surveillance can reduce the number of broken appliances as well as the scavenging level;
- It seems that **the role of the waste collection system for facilitating the subsequent sorting is extremely limited** and is rather focusing on “collection for transport” than on “collection for sorting”;
- **Qualitatively monitoring the presence of non-WEEE** by identifying and classifying unwanted materials can be an incentive for improving the quality of collected WEEE;
- No monitoring systems as such are being implemented to quantify the scavenging level at collection points. **Increasing the surveillance in municipal collection points** is nevertheless

considered as essential for reducing the scavenging level and improving the quality of collected WEEE from public sources;

- There is currently **no harmonization in the use (or not) of specific standards at collection points.**
- It is considered essential to have **trained professionals** carrying out collection and logistics operations.

## Construction and demolition waste

**For CDW**, the analysis of the two case studies on CDW fractions shows that setting up a dedicated recycling value chain can be interesting for specific CDW fractions. The starting point for the collection of the CDW fractions in both case studies was **the presence of a clear market for the final end application, and the corresponding business case.** The setup of the recycling value chain is in both cases quite straightforward: starting from the market for the final end application, the scope of the collected waste at the civic amenity site is determined and a matching sorting process is selected.

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